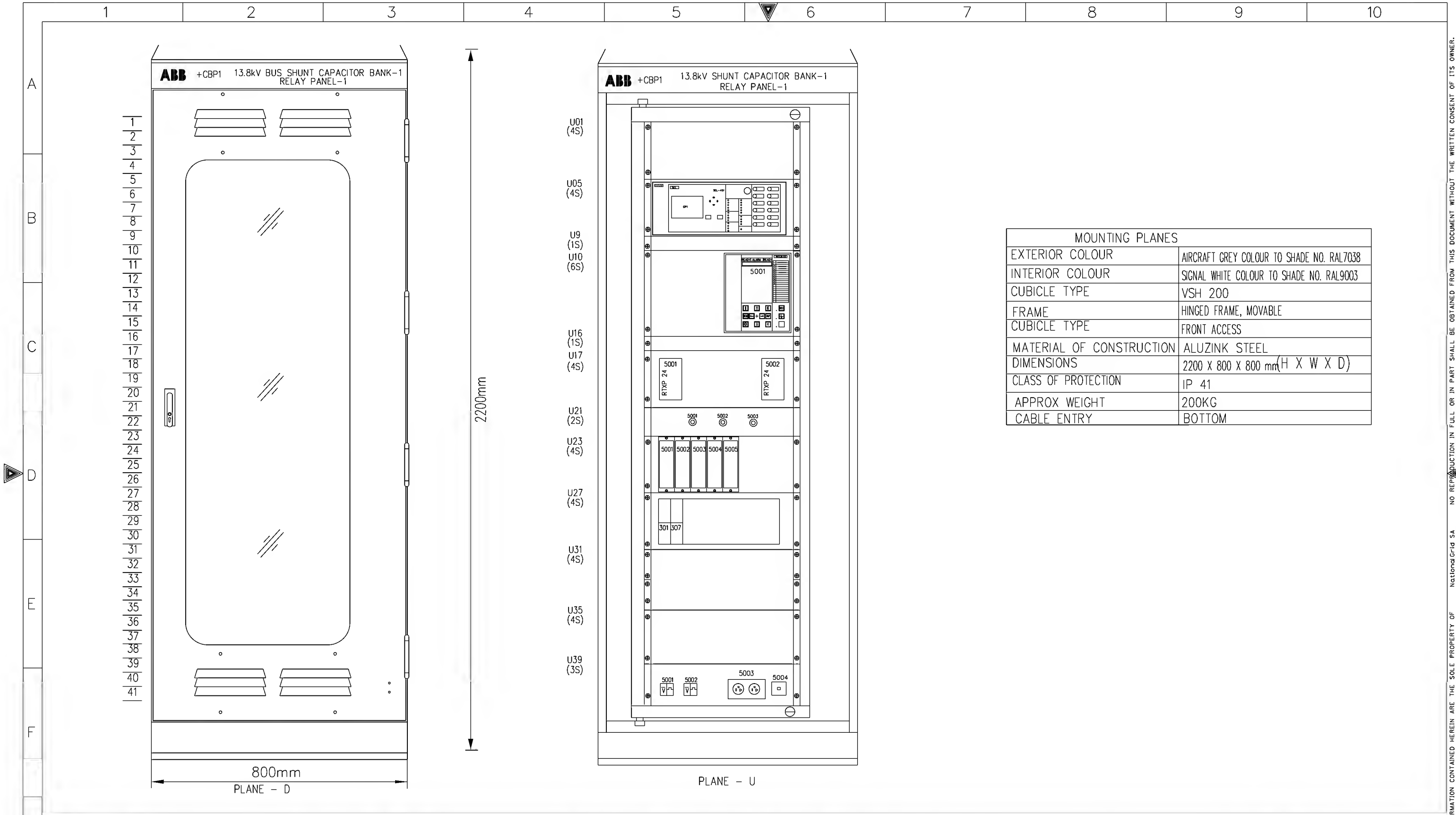


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A	<div><div>ABB</div><div>POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656</div></div>																																										
B																																											
C	CONTRACTOR : ABB Contracting Company																																										
	CLIENT : National Gridsa																																										
D	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8																																										
	SUBSTATION : S/S 8709																																										
E	CONTRACT NO. : 11131113/00																																										
	TITLE : Assembly Drawing – +CBP1 [CAPACITC																																										
F																																											
G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="2">COVER SHEET</td></tr><tr><td>01</td><td>14 08</td><td>FACTORY AS BUILT</td><td colspan="2">DRAWN BY RIZ</td><td colspan="2">CHECKED BY KVR</td><td colspan="2">13.8kV CAPACITOR BANK-1 PROT. PANEL</td></tr><tr><td>00</td><td>13 04</td><td>FOR APPROVAL</td><td colspan="2">DATE STARTED 24.01.2013</td><td colspan="2">DATE COMPLETED _____</td><td colspan="2">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td></tr><tr><td>REV. NO.</td><td>DATE</td><td>DESCRIPTION</td><td colspan="2">OPRG. DEPT. CTPD</td><td colspan="2">ENG. DEPT. AUT-PSAC</td><td colspan="2">RIYADH SAUDI ARABIA</td></tr></table>							AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET		01	14 08	FACTORY AS BUILT	DRAWN BY RIZ		CHECKED BY KVR		13.8kV CAPACITOR BANK-1 PROT. PANEL		00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA	
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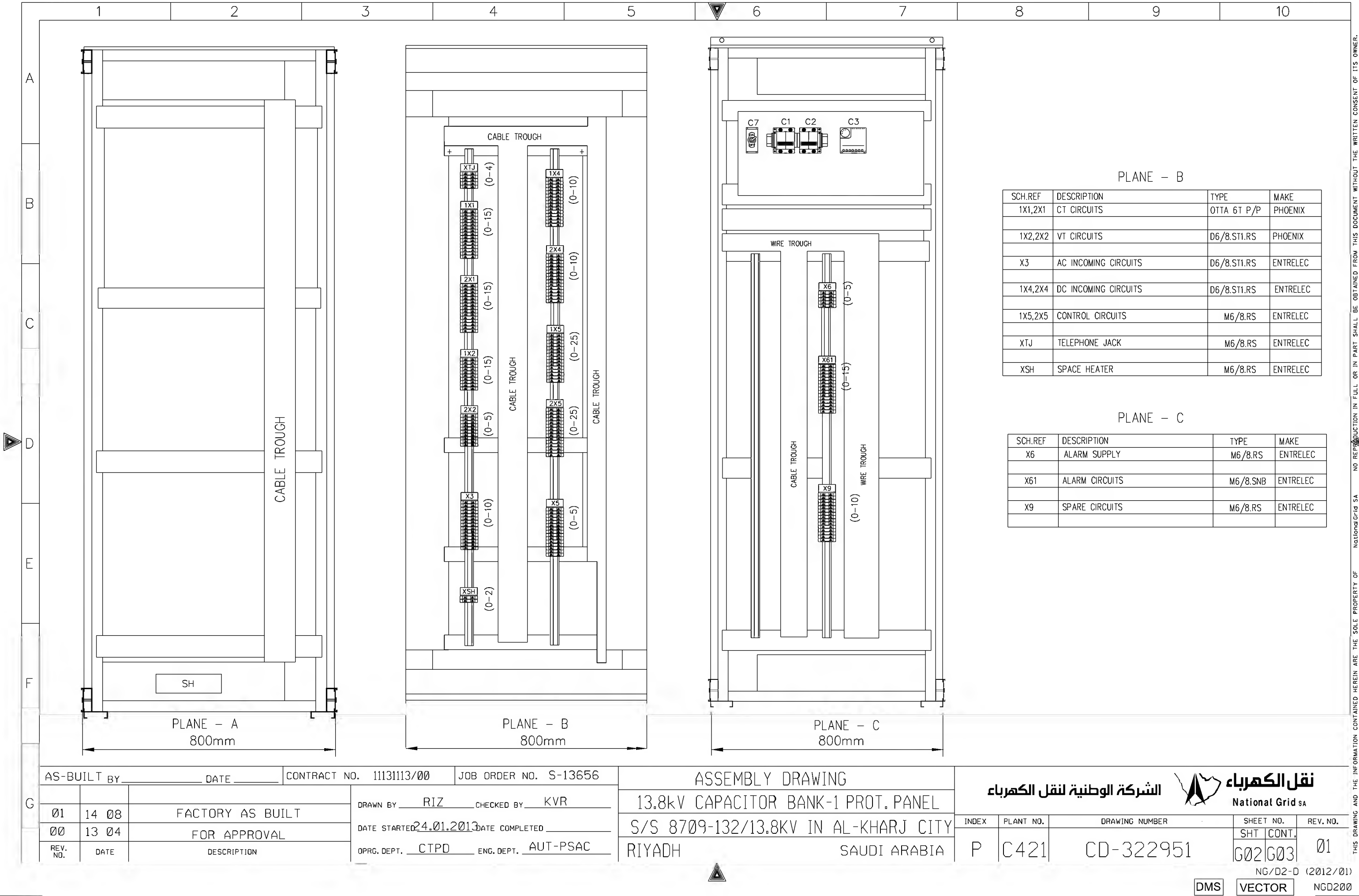
MOUNTING PLANES	
EXTERIOR COLOUR	AIRCRAFT GREY COLOUR TO SHADE NO. RAL7038
INTERIOR COLOUR	SIGNAL WHITE COLOUR TO SHADE NO. RAL9003
CUBICLE TYPE	VSH 200
FRAME	HINGED FRAME, MOVABLE
CUBICLE TYPE	FRONT ACCESS
MATERIAL OF CONSTRUCTION	ALUZINK STEEL
DIMENSIONS	2200 X 800 X 800 mm(H X W X D)
CLASS OF PROTECTION	IP 41
APPROX WEIGHT	200KG
CABLE ENTRY	BOTTOM

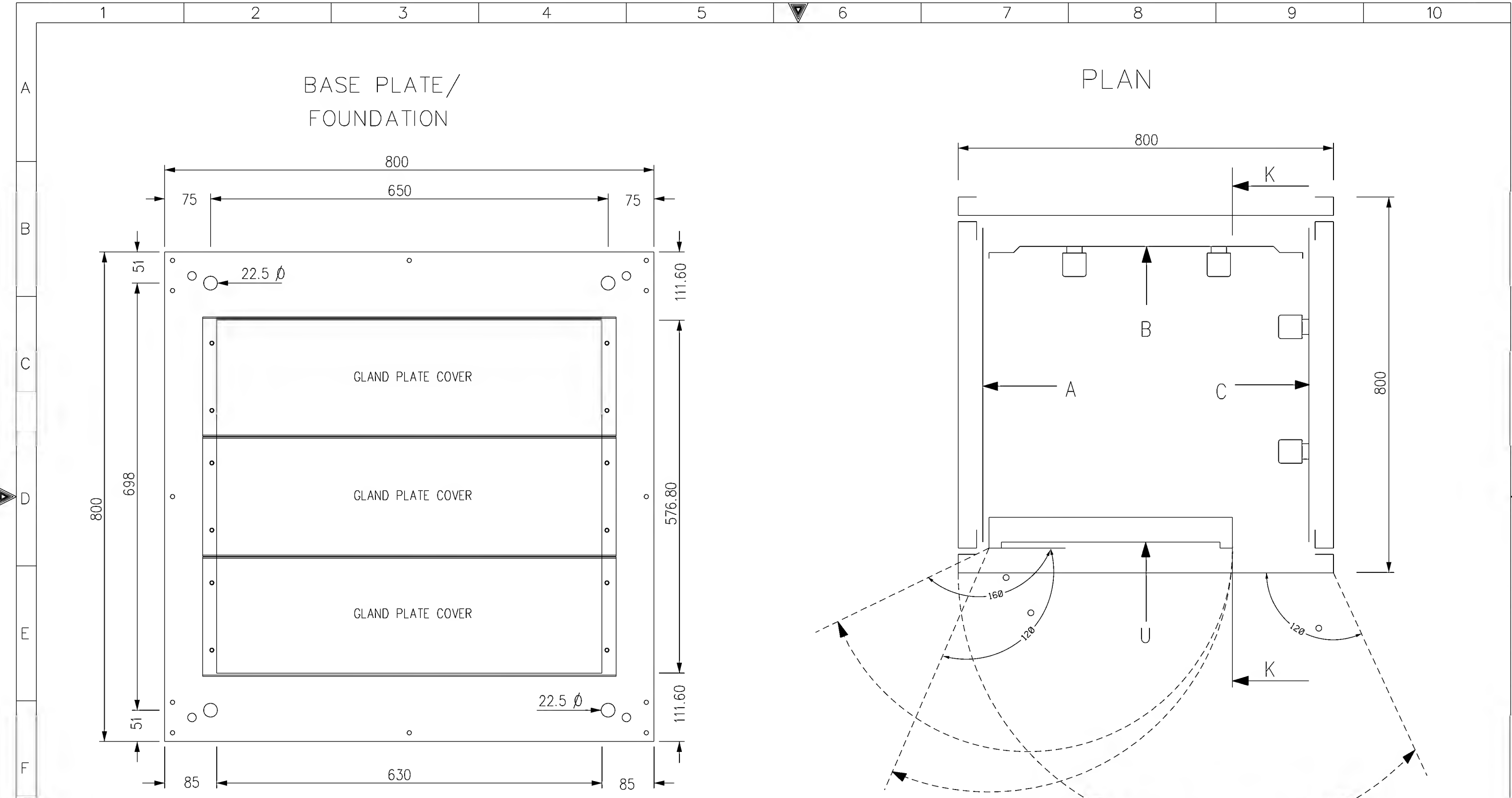
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	14 08	FACTORY AS BUILT	
00	13 04	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

DRAWN BY RIZ	CHECKED BY KVR
DATE STARTED 24.01.2013	DATE COMPLETED _____
OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING	
13.8kV CAPACITOR BANK-1 PROT. PANEL	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
P	C421	CD-322951	G01
			G02
			01





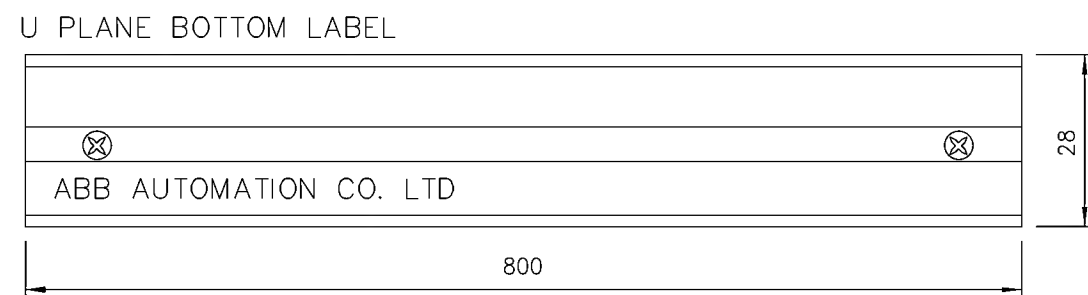
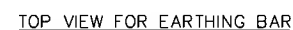
AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	14 08	FACTORY AS BUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ	CHECKED BY KVR
DATE STARTED 24.01.2013	DATE COMPLETED
OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING  
13.8kV CAPACITOR BANK-1 PROT. PANEL  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
P	C421	CD-322951	G03	01
			G04	



MANUFACTURING LABEL



ABB Automation Co.Ltd.

PROJECT :	National Grid SA S/S 8709
ORDER REFERENCE :	2875 RF S13656
YEAR OF MANUFACTURE:	2013
PANEL NO. :	+CBP1
DRAWING NO. :	S13656-CD-323952

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____	CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
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Ø1	14 08	FACTORY AS BUILT	DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>
Ø0	13 04	FOR APPROVAL	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>

ASSEMBLY DRAWING

13.8kV CAPACITOR BANK-1 PROT. PANEL

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

**الشركة الوطنية لنقل الكهرباء**



## نقل الكهرباء





INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
P	C421	CD-322951	SHT	CONT.	01
			G04	00	

NG/D2-D (2012/01)

DMS

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NGD200




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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																		
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	TITLE : LIST OF APPARATUS – +CBP1 [SHUNT CAPACITOR BANK1]																																																									
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NG/D2-D (2012/01)

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AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>																																																																	
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<div>NG/D2-D (2012/01)</div> <div>DMS VECTOR NGD200</div>																																																																									

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SR. NO.	LOCATION REF.	SCH REF.	D E S C R I P T I O N	SHT NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
3	U17.5001	TS-1	TEST SWITCH FOR GROUP-1 PROTECTION	213	1	RXTP24	ABB	RK 926 315-AG
4	U17.5002	TS-2	TEST SWITCH FOR GROUP-2 PROTECTION	214	1	RXTP24	ABB	RK 926 315-AK
5	U23.5001	86C-1	GROUP-1 LOCKOUT RELAY AUX. VOLTAGE : 125V DC CONTACTS : 8NO + 2NC FLAG:STANDARD HAND RESET CONTACT MECHANISM:HAND & ELECTRICAL RESET	218	1	MVAJ105	ALSTOM	MVAJ105RA0802A
6	U23.5002	94-1	TRIP RELAY AUX. VOLTAGE : 125V DC CONTACTS : 10NO	218	1	MVAJ101	ALSTOM	MVAJ101RA0800A
7	U23.5003	86BF	BF LOCKOUT RELAY AUX. VOLTAGE : 125V DC/TRIPPING RELAY-HIGH BURDEN CONTACTS : 8NO + 2NC FLAG:STANDARD HAND RESET CONTACT MECHANISM:HAND & ELECTRICAL RESET	220	1	MVAJ105	ALSTOM	MVAJ105RA0802A
8	U23.5004	86C-2	GROUP-2 LOCKOUT RELAY AUX. VOLTAGE : 125V DC CONTACTS : 8NO + 2NC FLAG:STANDARD HAND RESET CONTACT MECHANISM:HAND & ELECTRICAL RESET	220	1	MVAJ105	ALSTOM	MVAJ105RA0802A
9	U23.5005	94-2	TRIP RELAY AUX. VOLTAGE : 125V DC CONTACTS : 10NO	220	1	MVAJ101	ALSTOM	MVAJ101RA0800A
10	U21.5001	PB11	PUSH BUTTON FOR RESETTNG 86C-1 LOCKOUT RELAY BUTTON COLOUR ;BLACK:CONTACT DATA:1NO+1NC	218	1	MP1-10B	ABB	1SFA 611 100 R1006
11	U21.5002	PB22	PUSH BUTTON FOR RESETTNG 86BF LOCKOUT RELAY BUTTON COLOUR ;BLACK:CONTACT DATA:1NO+1NC	220	1	MP1-10B	ABB	1SFA 611 100 R1006
12	U21.5003	PB21	PUSH BUTTON FOR RESETTNG 86C-2 LOCKOUT RELAY BUTTON COLOUR ;BLACK:CONTACT DATA:1NO+1NC	220	1	MP1-10B	ABB	1SFA 611 100 R1006
13	U27.301	74R1	DC SUPERVISION RELAY (REVERSE FLAG)	218		RXSF1	ABB	RK 271 019-AN
		SPARE	AUX. VOLTAGE : 110-125V DC					
			CONTACTS : 1NO + 2NC PER COIL					
			FLAG : SELF RESET					

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

01

14 08

FACTORY AS BUILT

00

13 04

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 24.01.2013 DATE COMPLETED \_\_\_\_\_

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

LIST OF APPARATUS

13.8kV CAPACITOR BANK-1 PROT. PANEL

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

National Grid SA

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

REV. NO.

P

C421

CD-322951

L02

03

01

NG/D2-D (2012/01)

DMS VECTOR

NGD200

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AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
01 14 08		FACTORY AS BUILT		DRAWN BY RIZ CHECKED BY KVR		13.8kv CAPACITOR BANK-1 PROT. PANEL		INDEX		PLANT NO.		DRAWING NUMBER	
00 13 04		FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		P		C421		CD-322951	
REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		SAUDI ARABIA		SHEET NO.		REV. NO.	
										L03		L04	
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NG/D2-D (2012/01)


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G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء</div> <div>National Grid sa</div>				
	01	14 08	FACTORY AS BUILT	DRAWN BY RIZ	CHECKED BY KVR	13.8kV CAPACITOR BANK-1 PROT. PANEL	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY				SHT	CONT.
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA	P	C421	CD-322951	L04	L05

NG/D2-D (2012/01)

DMS

VECTOR

NGD200

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LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
U05.5001	U05.5001 GP1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U10.5001	U10.5001 GP2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U17.5001	U17.5001 TS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U17.5002	U17.5002 TS-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U21.5001	U21.5001 PB11	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U21.5002	U21.5002 PB22	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U21.5003	U21.5003 PB21	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U23.5001	U23.5001 86C-1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U23.5002	U23.5002 94-1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U23.5003	U23.5003 86CBF	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U23.5004	U23.5004 86C-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U23.5005	U23.5005 94-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	3mm
U27: 301	U27.301 74R1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U27: 307	U27.307 74R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	14 08	DRAWN BY RIZ CHECKED BY KVR	
00	13 04	DATE STARTED 24.01.2013 DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	
		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	

LIST OF APPARATUS	
13.8kV CAPACITOR BANK-1 PROT. PANEL	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء		National Grid sa		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
P	C421	CD-322951	L05L06	01


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LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
C1	C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C2	C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C3	C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C7	C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
DS	DS DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
IL	IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
SH	SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	14 08	FACTORY AS BUILT FOR APPROVAL	DRAWN BY RIZ CHECKED BY KVR
00	13 04		DATE STARTED 24.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC


LIST OF APPARATUS	
13.8kv CAPACITOR BANK-1 PROT. PANEL	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
P	C421	CD-322951	L06	NIL	01

	1	2	3	4	5	6	7	8	9	10
A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD. 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A		
B										
C	CONTRACTOR : ABB Contracting Company									
	CLIENT : National Gridsa									
D	PROJECT : CONSTRUCTION OF NEW 132/13.8kv SS 8709 IN AL-KHARJ CITY									
	SUBSTATION : S/S 8709									
E	CONTRACT NO. : 11131113/00									
F	TITLE : SCHEMATICS DRAWINGS +CBP1 (SHUNT CAPACITOR BANK-1)									

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COVER SHEET		 <b>نقل الكهرباء</b> الشركة الوطنية لنقل الكهرباء National Grid sa				
	01	14 08	FACTORY AS BUILT FOR APPROVAL	DRAWN BY RIZ	CHECKED BY KVR	13.8kv CAPACITOR BANK-1 PROT. PANEL	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00	13 04		DATE STARTED 24.01.2013	DATE COMPLETED	S/S 8709-132/13.8KV IN AL-KHARJ CITY	P	C421	CD-322952	SHT 000	CONT. 001
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH	SAUDI ARABIA				01

NG/D2-D (2012/01)  
DMS VECTOR NGD200

	1	2	3	4	5		6	7	8	9	10
A											
B											
C											
D											
E											
F											

CONTENTS		ABB SHT.NO.	REV.00	REV.01	REV.02
COVER SHEET		000	X	X	
CONTENTS SHEET		001	X	X	
GRAPHICAL SYMBOLS FOR DIAGRAMS		011	X	X	
GRAPHICAL SYMBOLS FOR DIAGRAMS		012	X	X	
COMMON LEGEND		013	X	X	
FERULE AND WIRING DETAILS		014	X	X	
DRAWING REFERENCES		015	X	X	
DRAWING REFERENCES		016	X	X	
AC SUPPLY FOR ILLUMINATION & POWER SOCKET		211	X	X	
AC SUPPLY AUXILARY CONTACTS		212	X	X	
CT&VT CIRCUITS –GP1 PROTN		213	X	X	
CT CIRCUITS–GP2 PROTN		214	X	X	
VT CIRCUITS–GP2 PROTN		215	X	X	
DC SUPPLY DISTRIBUTION ± R1,±R2		216	X	X	
DC LOGIC CIRCUITS–GP1 PROTECTION		217	X	X	
DC LOGIC CIRCUITS–GP1 PROTECTION		218	X	X	
DC LOGIC CIRCUITS–GP2 PROTECTION		219	X	X	
DC LOGIC CIRCUITS–GP2 PROTECTION		220	X	X	
DC LOGIC CIRCUITS–GP2 PROTECTION		221	X	X	
13.8kV CBS105 TRIP CIRCUIT 1&2		222	X	X	
13.8kV CBS105 CLOSE BLOCK CIRCUIT		223	X	X	
13.8kV CB CLOSE BLOCK CIRCUITS		224	X	X	
STATION COMMON ALARM CIRCUITS		227	X	X	

CONTENTS		ABB SHT.NO.	REV.00	REV.01	REV.02
SPARE CONTACTS		231	X	X	
SAS COMMUNICATIOIN		245	X	X	
BLOCK REFERENCE–GP1		601	X	X	
BLOCK REFERENCE–GP2		602	X	X	
BLOCK REFERENCE–GP2		603	X	X	
BLOCK REFERENCE–GP2		604	X	X	
TERMINAL BLOCK ALLOCATION		604	X	X	







	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										

LEGENDS

±R1

±R2

±R3

±IT

FL

BB RS±

BB CBF±/CBF±

R

CR

ECC

LOCAL

REMOTE

ON

OFF

A

T

S

CS

CT

LS

LT

LC

LO

RO

DC SUPPLY – MAIN PROTECTION

DC SUPPLY – SECONDARY PROTECTION

DC SUPPLY – BACK UP PROTECTION

DC SUPPLY – INTER TRIP

DC SUPPLY – FLASHING CIRCUIT

DC SUPPLY – BUS BAR – PROTECTION RESET

DC SUPPLY – CBF PROTECTION

RESET BUS – ALARM SYSTEM

CONTROL ROOM

ENERGY CONTROL CENTRE

THE LOCATION OF CONTROLLED DEVICE

ANY OTHER LOCATION NOT LOCAL

CB NORMALLY OPEN AUXILIARY CONTACT

CB NORMALLY CLOSED AUXILIARY CONTACT

COMMON

TEST POSITION

SERVICE POSITION

CLOSE IN SERVICE POSITION

CLOSE IN TEST POSITION

LOCAL SERVICE

LOCAL TEST

LOCAL CLOSE

LOCAL OPEN

REMOTE OPEN

NOTES

LABELS

LUGS

FERULLING

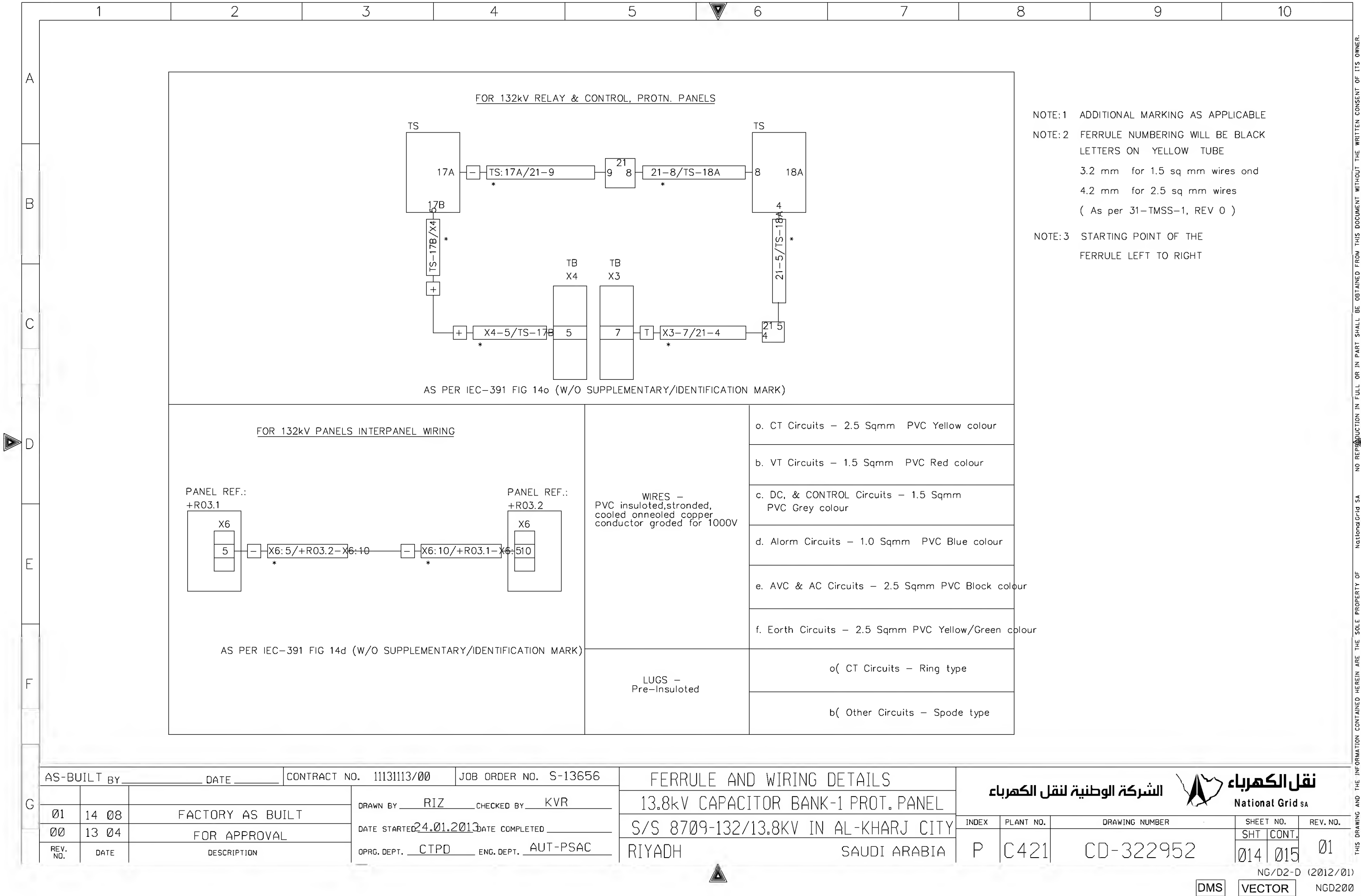
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMON LEGENDS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
01	14 08	FACTORY AS BUILT		DRAWN BY RIZ CHECKED BY KVR		13.8kV CAPACITOR BANK-1 PROT. PANEL		INDEX		PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		P		C421	CD-322952	SHT 013 CONT. 014		01
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA								

NG/D2-D (2012/01)


DMS

VECTOR

NGD200



	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										

MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
 PROTECTION & SUBSTATION AUTOMATION		SS 8709 132kV RELAY PANELS	
	CD-322928	132/13.8kV GT-1 RELAY PANEL -1	+R05.1
		132/13.8kV GT-1 RELAY PANEL -2	+R05.2
	CD-322931	132/13.8kV GT-2 RELAY PANEL -1	+R01.1
		132/13.8kV GT-2 RELAY PANEL -2	+R01.2
	CD-322934	132/13.8kV GT-3 RELAY PANEL -1	+R04.1
		132/13.8kV GT-3 RELAY PANEL -2	+R04.2
	CD-322936	132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL	+AVC
	CD-322922	132KV SPARE-1 UGF RELAY PANEL -1	+R07.1
		132KV SPARE-1 UGF RELAY PANEL -2	+R07.2
	CD-322916	132KV 8020 UGF RELAY PANEL -1	+R02.1
		132KV 8020 UGF RELAY PANEL -2	+R02.2
	CD-322919	132KV 8710 UGF RELAY PANEL -1	+R03.1
		132KV 8710 UGF RELAY PANEL -2	+R03.2
	CD-322925	132KV SPARE-2 UGF RELAY PANEL -1	+R06.1
		132KV SPARE-2 UGF RELAY PANEL -2	+R06.2
	CD-323012	132KV FOIP PANEL	+FOIP
	CD-322946	132kV BUS COUPLER-A	+R130
	CD-322948	132kV BUS COUPLER-B	+R230
	CD-322950	132kV BUS SECTION	+R120
	CD-322991	132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL	+BB1-1
	CD-322993	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-2
	CD-322995	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-3
	CD-322997	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-4
	CD-322999	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-5
	CD-323001	132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL	+BB2-1
	CD-323003	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-2
	CD-323005	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-3
	CD-323007	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-4
	CD-323009	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-5

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	14 08	FACTORY AS BUILT	DRAWN BY RIZ CHECKED BY KVR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	

DRAWING REFERENCES	
13.8kV CAPACITOR BANK-1 PROT. PANEL	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	
P	C421	CD-322952	SHT	REV. NO.
			CONT.	
			015	016
				01

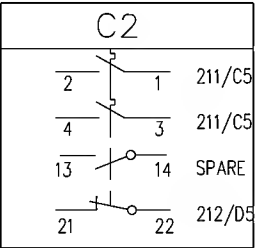
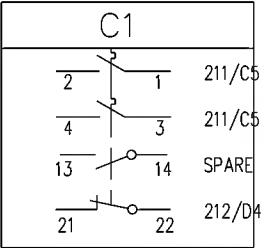
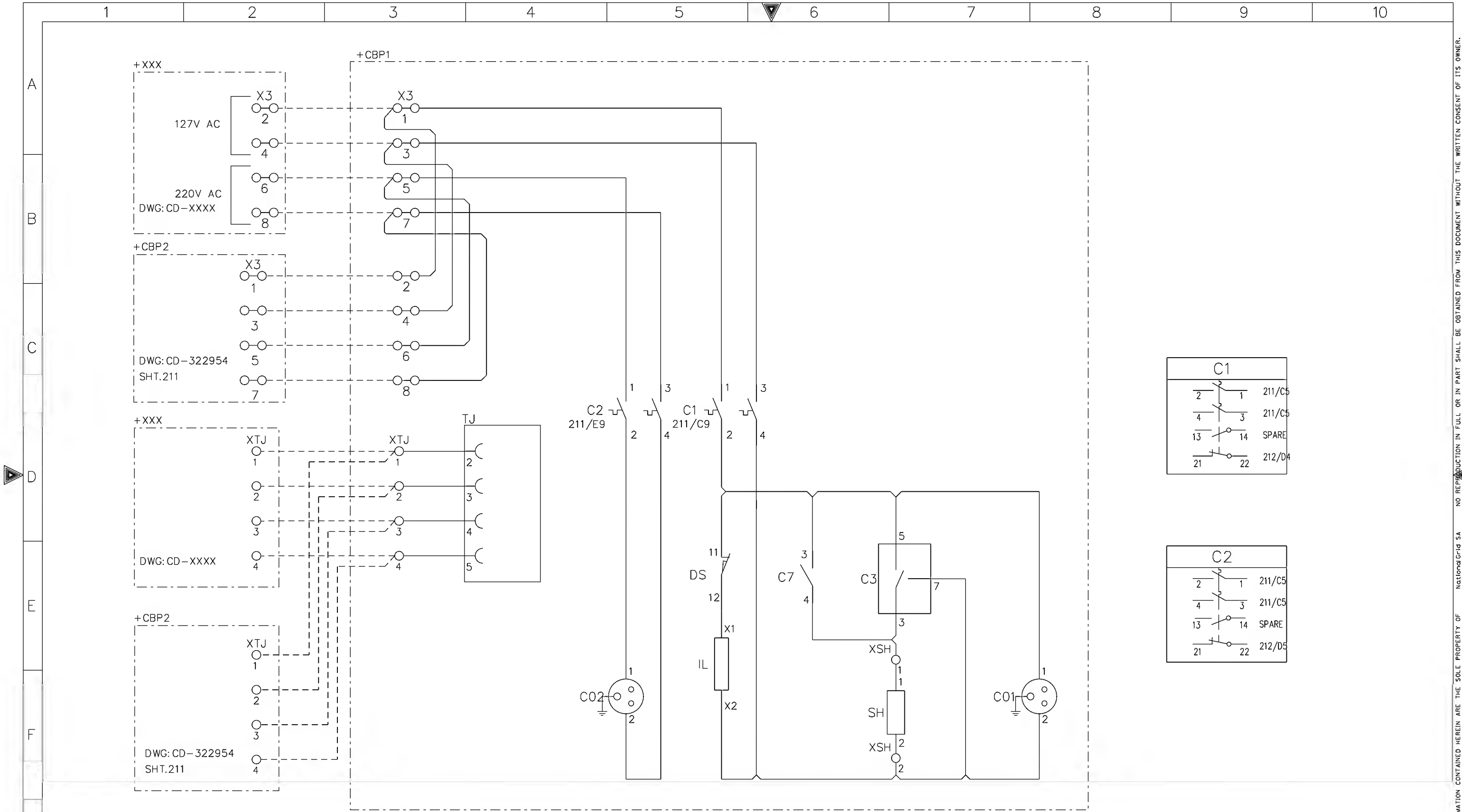
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C										
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E										
F										
G										

MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
<div>ABB</div> <div>PROTECTION &amp; SUBSTATION AUTOMATION</div>		SS 8709 13.8KV RELAY PANELS	
	CD-322952	13.8KV Capacitor Bank-1 Protection Panel	+CBP-1
	CD-322954	13.8KV Capacitor Bank-2 Protection Panel	+CBP-2
	CD-322956	13.8KV Capacitor Bank-2 Protection Panel	+CBP-3
	CD-322958	13.8 KV ACCS PANEL	+ACCS
	CD-322962	13.8KV ACSE PANEL	+ACSE
	CD-322968	13.8KV Under Voltage Load Shedding Panel	+UVLS
	CD-322964	13.8KV Under Frequency Load Shedding Panel-1	+UFLS01
	CD-322966	13.8KV Under Frequency Load Shedding Panel-2	+UFLS02

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	14 08	FACTORY AS BUILT	DRAWN BY RIZ CHECKED BY KVR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	

DRAWING REFERENCES	
13.8kv CAPACITOR BANK-1 PROT. PANEL	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
P	C421	CD-322952	016
			211
			01



AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

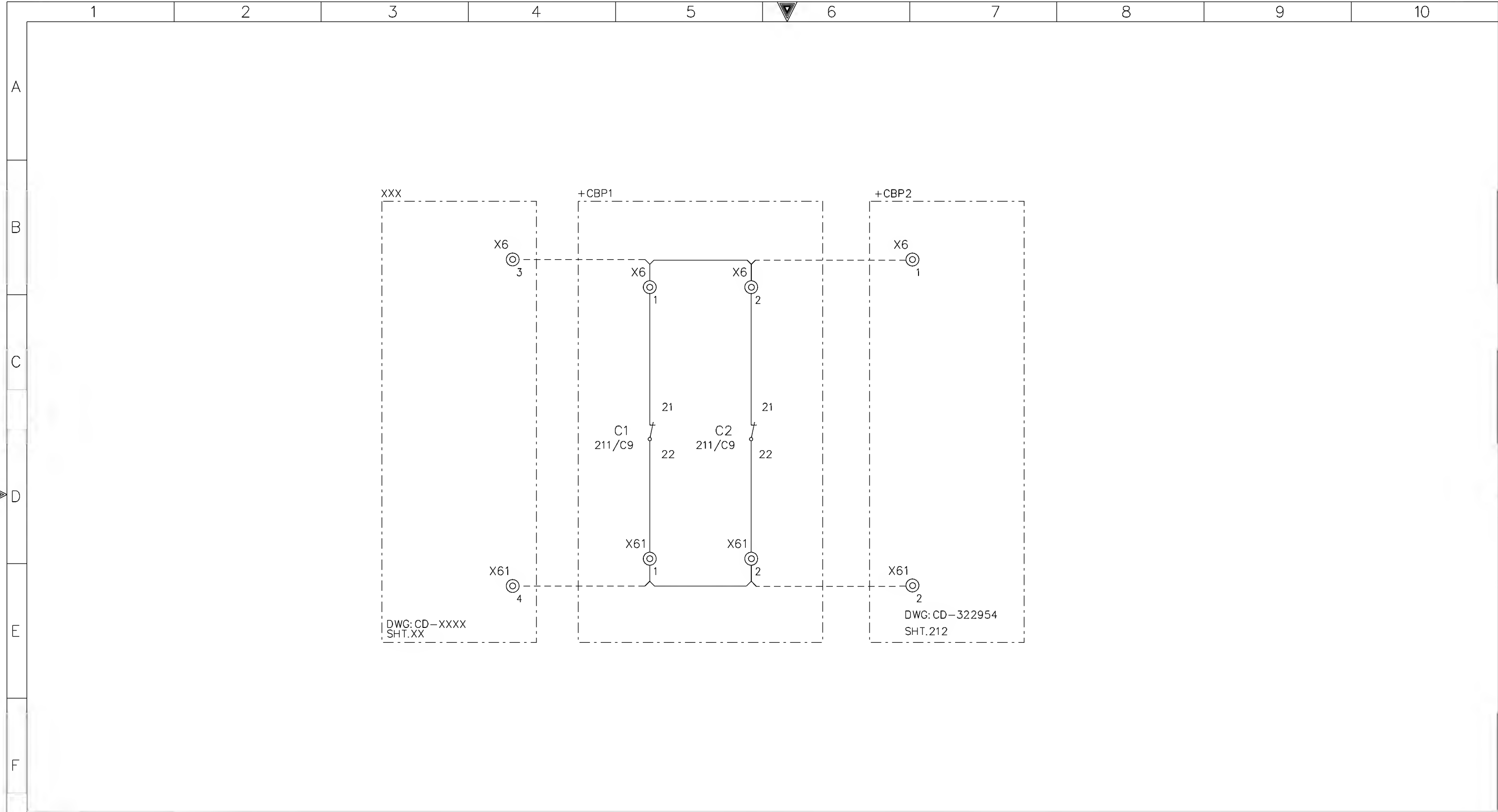
01	14 08	FACTORY AS BUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY	RIZ	CHECKED BY	KVR
DATE STARTED	24.01.2013	DATE COMPLETED	
OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSAC

AC SUPPLY FOR ILLUMINATION & POWER SOCKET  
13.8kV CAPACITOR BANK-1 PROT. PANEL  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء  
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
P	C421	CD-322952	SHT 211	CONT. 212
				01



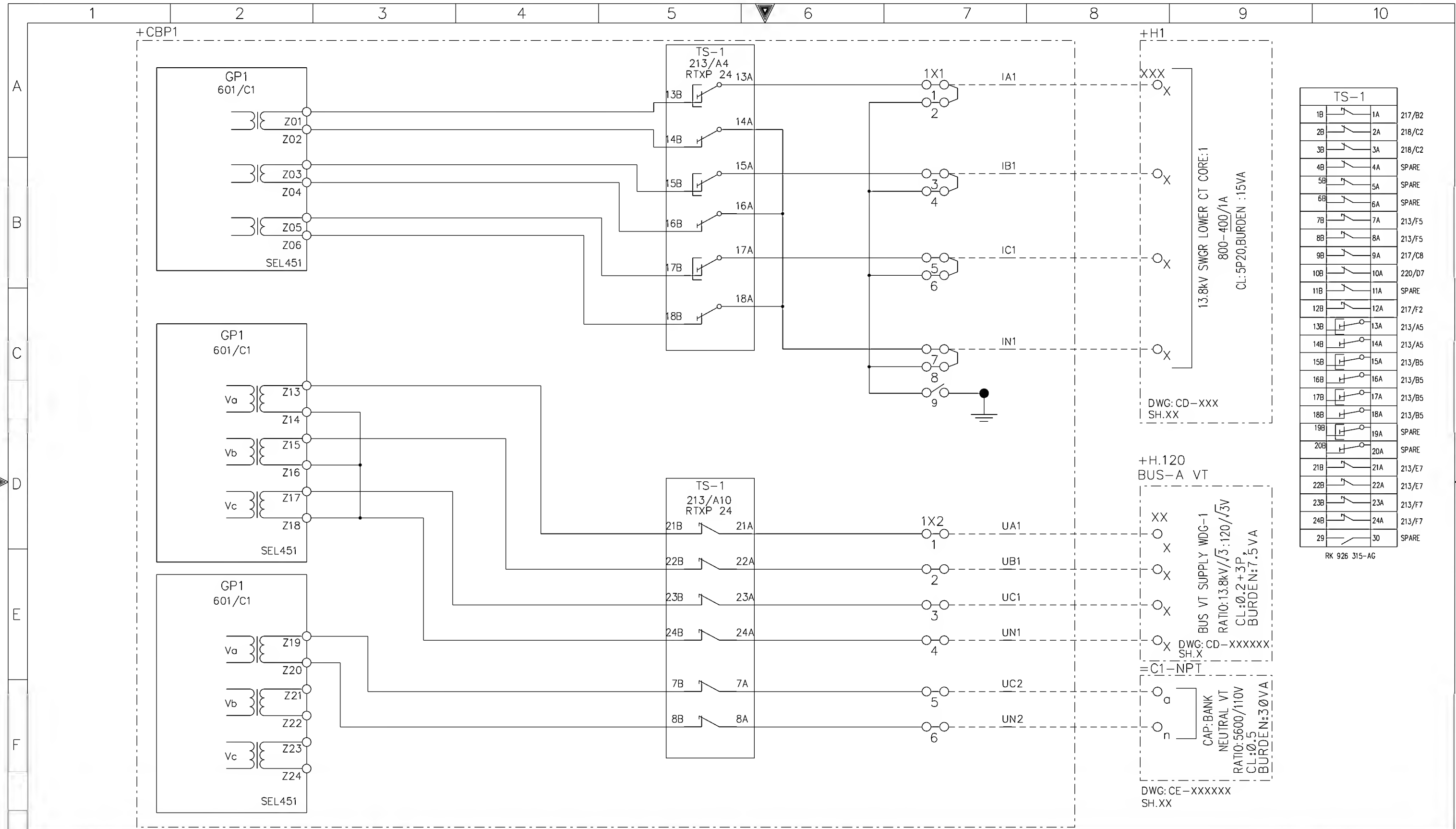
AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	14 08	FACTORY AS BUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR  
DATE STARTED 24.01.2013 DATE COMPLETED \_\_\_\_\_  
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

AC SUPPLY AUXILARY CONTACTS  
13.8kV CAPACITOR BANK-1 PROT. PANEL  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
P	C421	CD-322952		SHT	CONT.
				212	213
				REV. NO.	
				01	



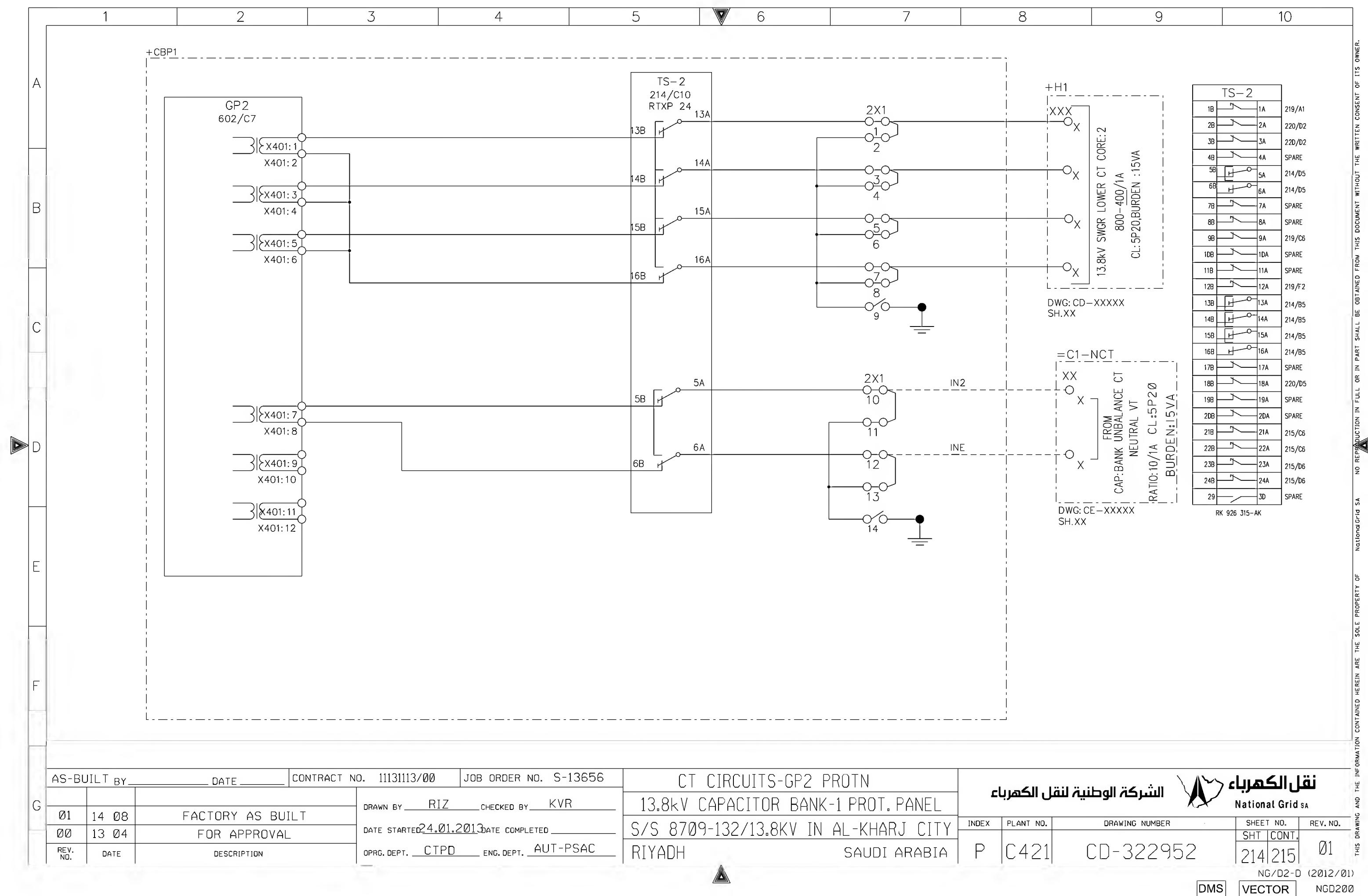
TS-1		
1B	1A	217/B2
2B	2A	218/C2
3B	3A	218/C2
4B	4A	SPARE
5B	5A	SPARE
6B	6A	SPARE
7B	7A	213/F5
8B	8A	213/F5
9B	9A	217/C8
10B	10A	220/D7
11B	11A	SPARE
12B	12A	217/F2
13B	13A	213/A5
14B	14A	213/A5
15B	15A	213/B5
16B	16A	213/B5
17B	17A	213/B5
18B	18A	213/B5
19B	19A	SPARE
20B	20A	SPARE
21B	21A	213/E7
22B	22A	213/E7
23B	23A	213/F7
24B	24A	213/F7
29	30	SPARE

RK 926 315-AG

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	14 08	FACTORY AS BUILT	
00	13 04	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____	
OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

CT&VT CIRCUITS-GP1 PROT N  
13.8kV CAPACITOR BANK-1 PROT. PANEL  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
National Grid sa		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
P	C421	CD-322952	213/214
REV. NO.		01	



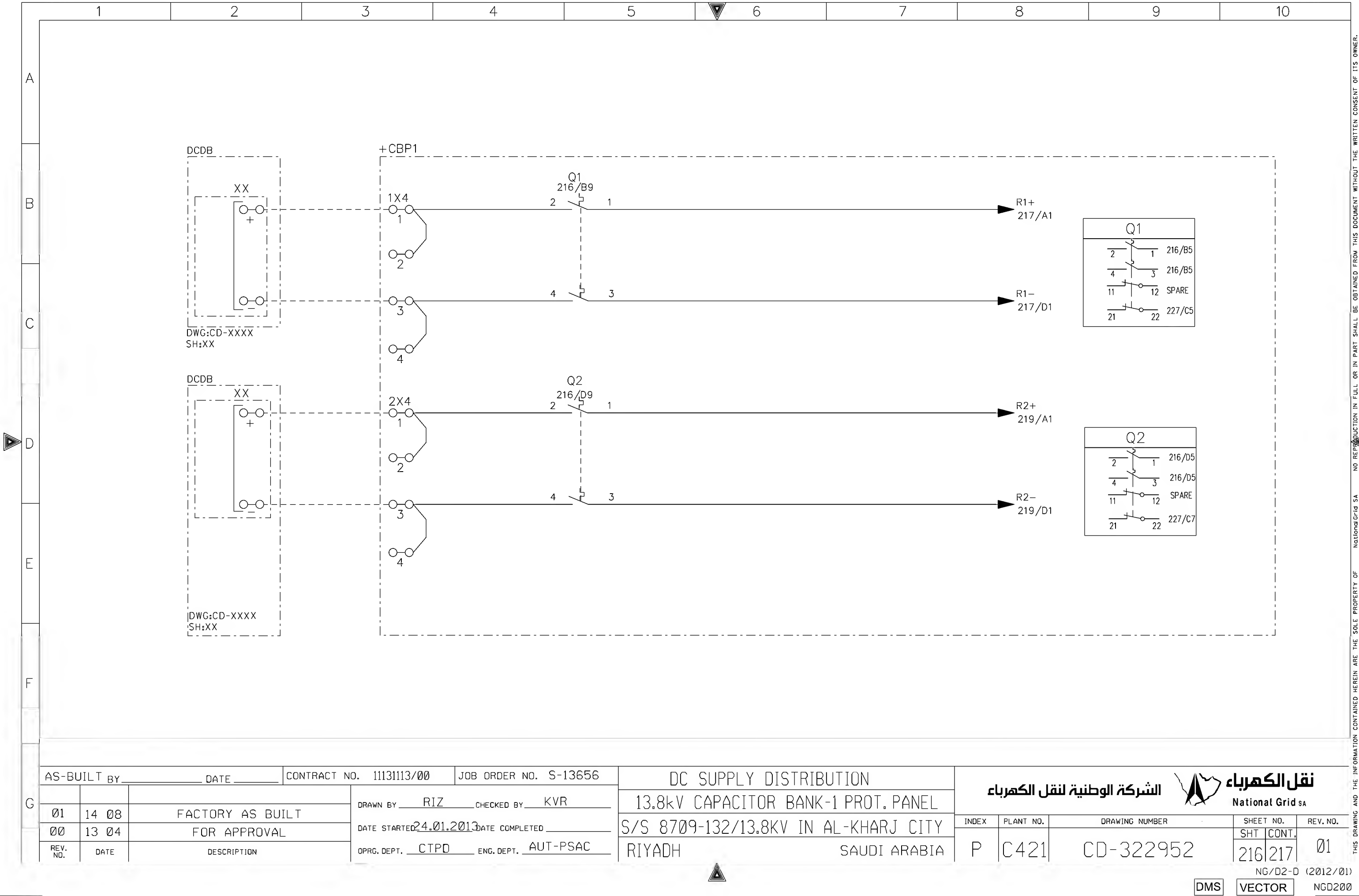
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	14 08	FACTORY AS BUILT FOR APPROVAL	DRAWN BY RIZ	CHECKED BY KVR
00	13 04		DATE STARTED 24.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

CT CIRCUITS-GP2 PROTN	
13.8kV CAPACITOR BANK-1 PROT. PANEL	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

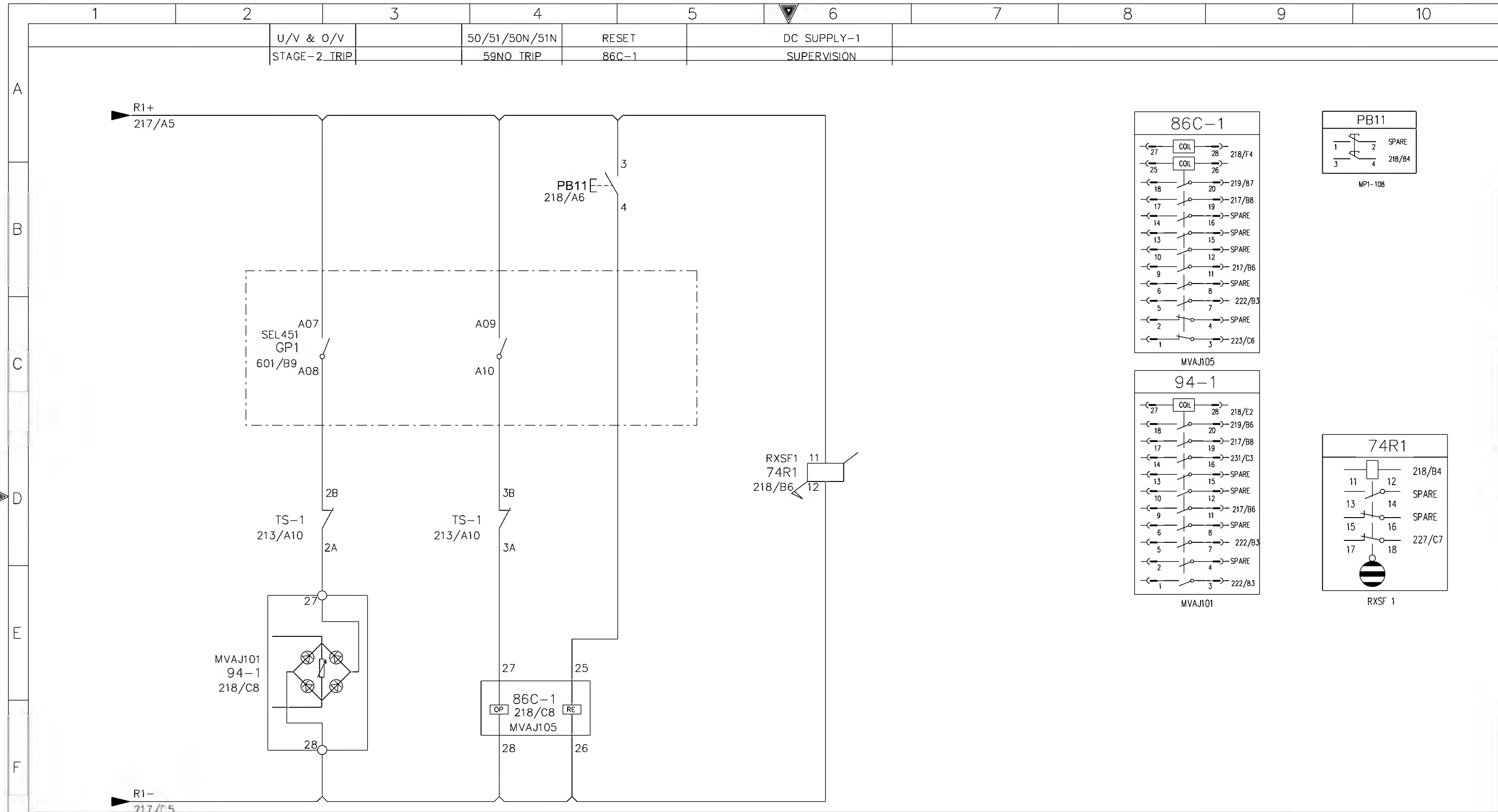
الشركة الوطنية لنقل الكهرباء National Grid sa				
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P	C421	CD-322952	SHT 214	CONT. 215
				01



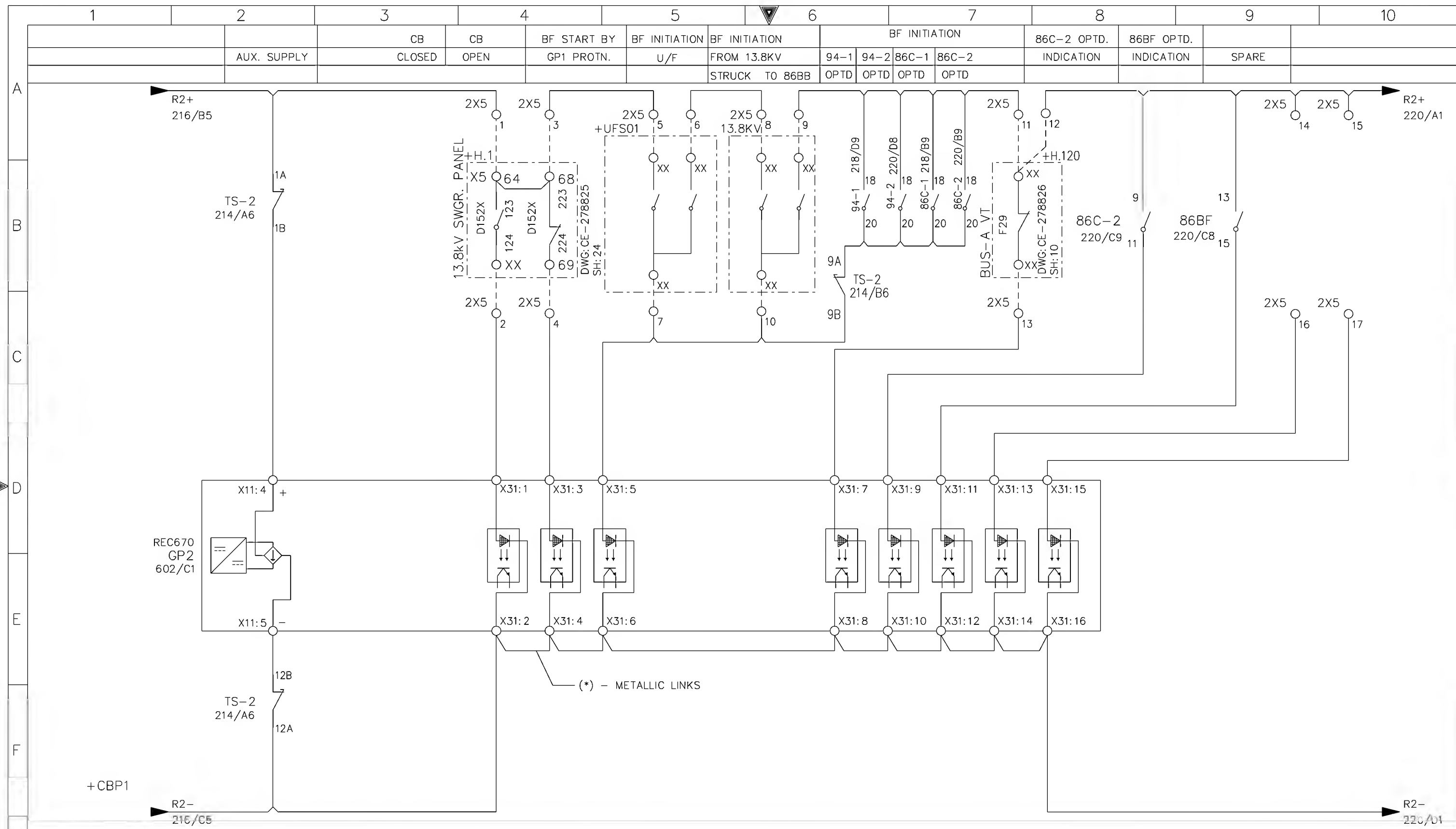





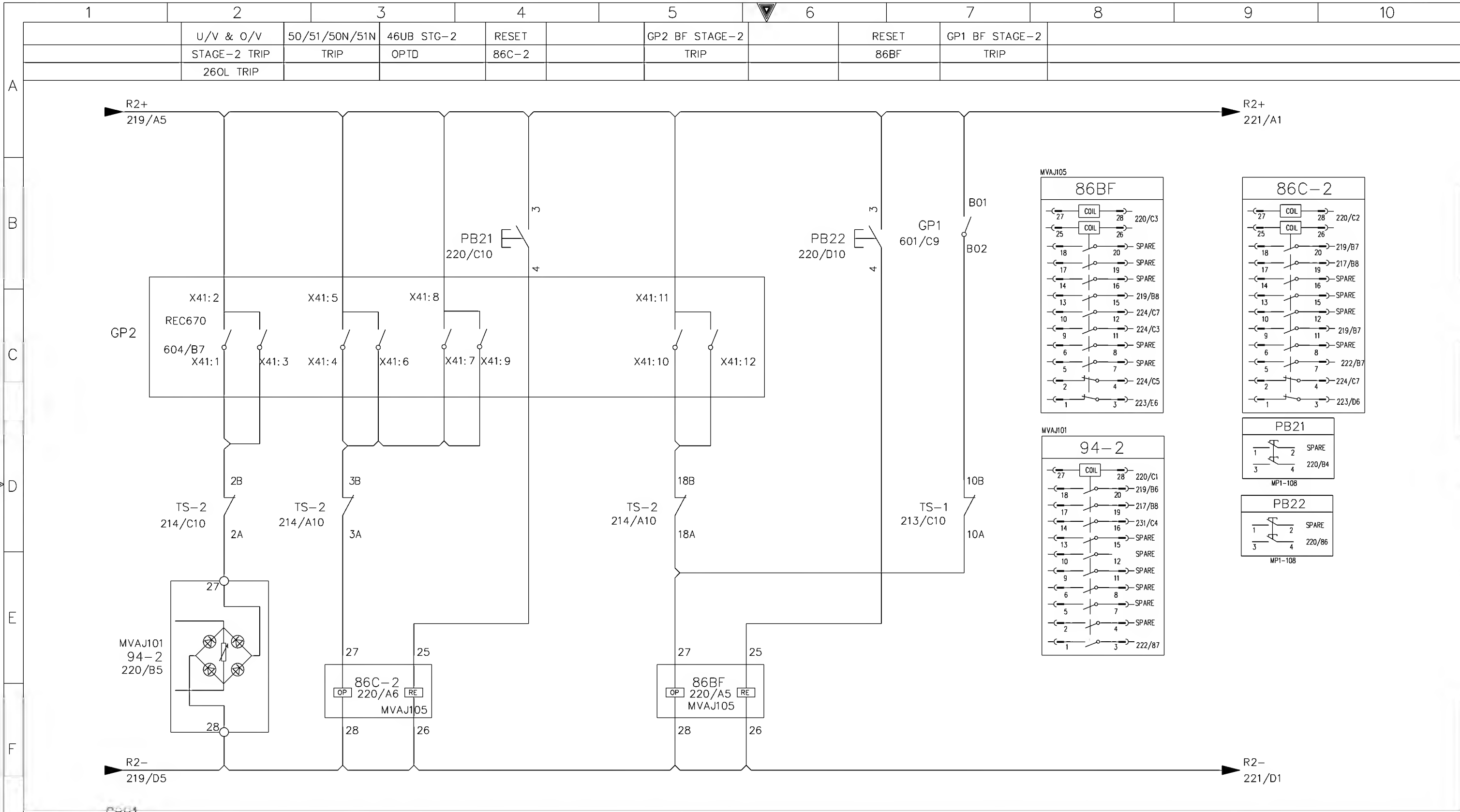




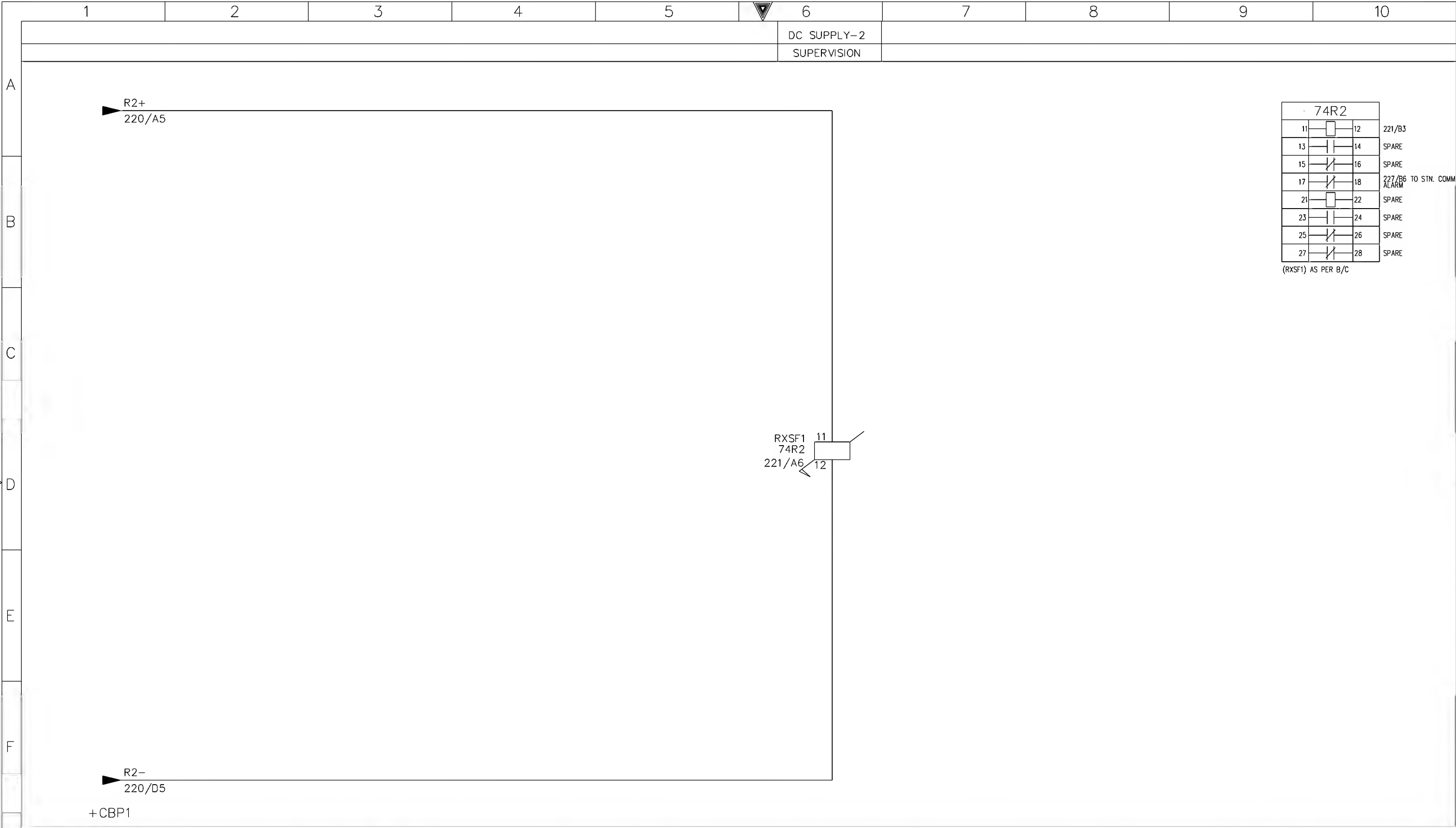
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DC LOGIC CIRCUIT-GP1 PROTECTION		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa	
DRAWN BY RIZ		CHECKED BY KVR		DATE STARTED 24.01.2013		DATE COMPLETED _____		INDEX		PLANT NO.	
01		14 08		FACTORY AS BUILT		S/S 8709-132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER		SHEET NO.	
00		13 04		FOR APPROVAL		RIYADH		P		C421	
REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		CD-322952	
										218	
										219	
										01	
										NG/D2-D (2012/01)	
										DMS	
										VECTOR	
										NGD200	



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DC LOGIC CIRCUITS-GP2 PROTECTION		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>									
					DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		13.8kV CAPACITOR BANK-1 PROT. PANEL		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
	01	14 08	FACTORY AS BUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		P	C421	CD-322952	SHT		CONT.		21922001		
	00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA											
REV. NO.		DATE		DESCRIPTION														




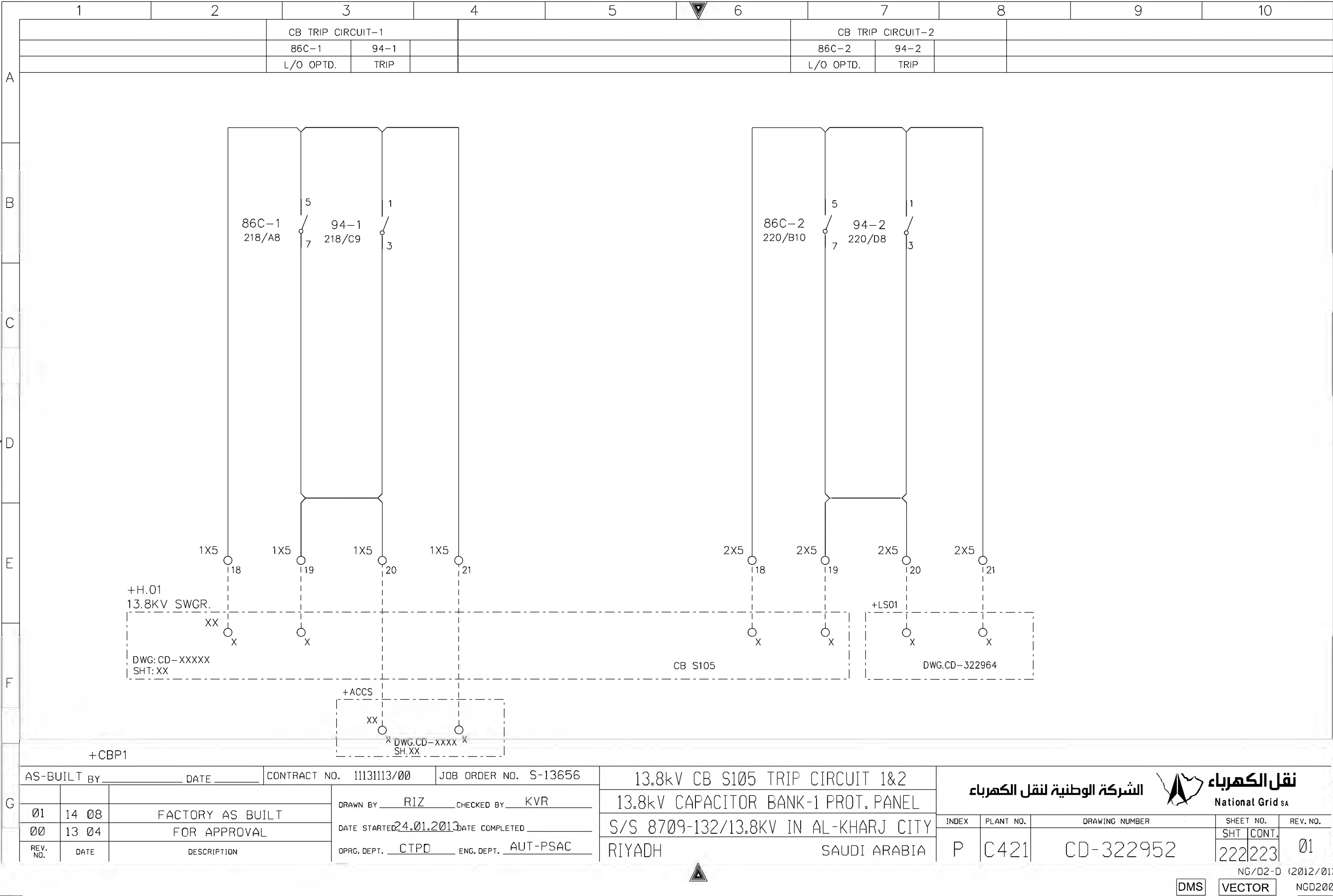
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FACTORY AS BUILT			DRAWN BY RIZ		CHECKED BY KVR		13.8kV CAPACITOR BANK-1 PROT. PANEL																	
FOR APPROVAL			DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY																	
REV. NO.			DATE		DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH		SAUDI ARABIA		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
															P		C421		CD-322952		SHT		CONT.	
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																							01	



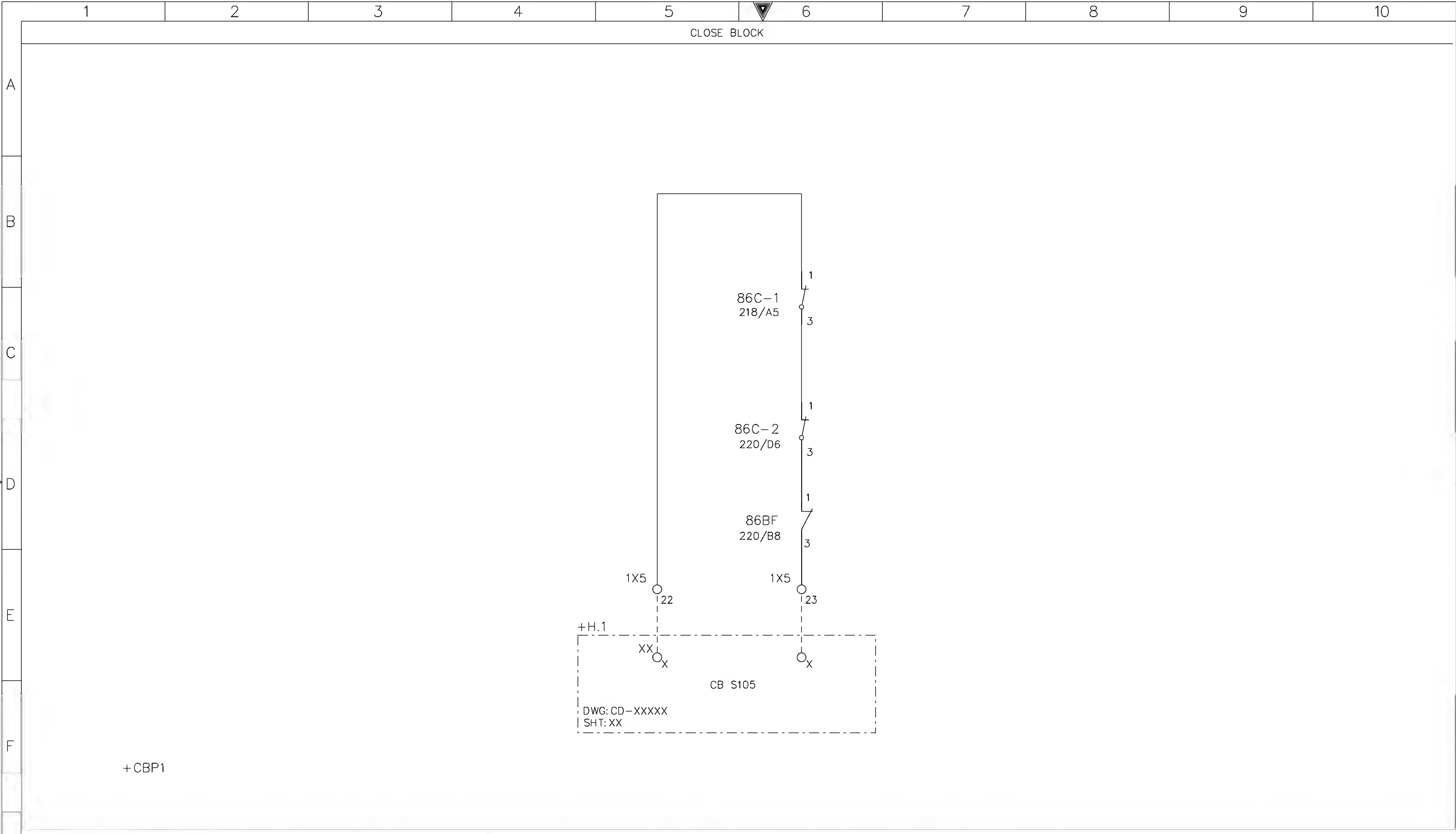
74R2			
11	<div></div>	12	221/B3
13	<div></div>	14	SPARE
15	<div></div>	16	SPARE
17	<div></div>	18	227/B6 ALARM TO STN. COMM
21	<div></div>	22	SPARE
23	<div></div>	24	SPARE
25	<div></div>	26	SPARE
27	<div></div>	28	SPARE

(RXSF1) AS PER B/C

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DC LOGIC CIRCUITS-GP2 PROTECTION		<div>الشركة الوطنية لنقل الكهرباء</div> <div><div></div>National Grid sa</div>							
			DRAWN BY RIZ		CHECKED BY KVR		13.8kV CAPACITOR BANK-1 PROT. PANEL									
01	14 08	FACTORY AS BUILT		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
00	13 04	FOR APPROVAL		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		P	C421	CD-322952		SHT 221CONT. 222		01
REV. NO.	DATE	DESCRIPTION														







+CBP1

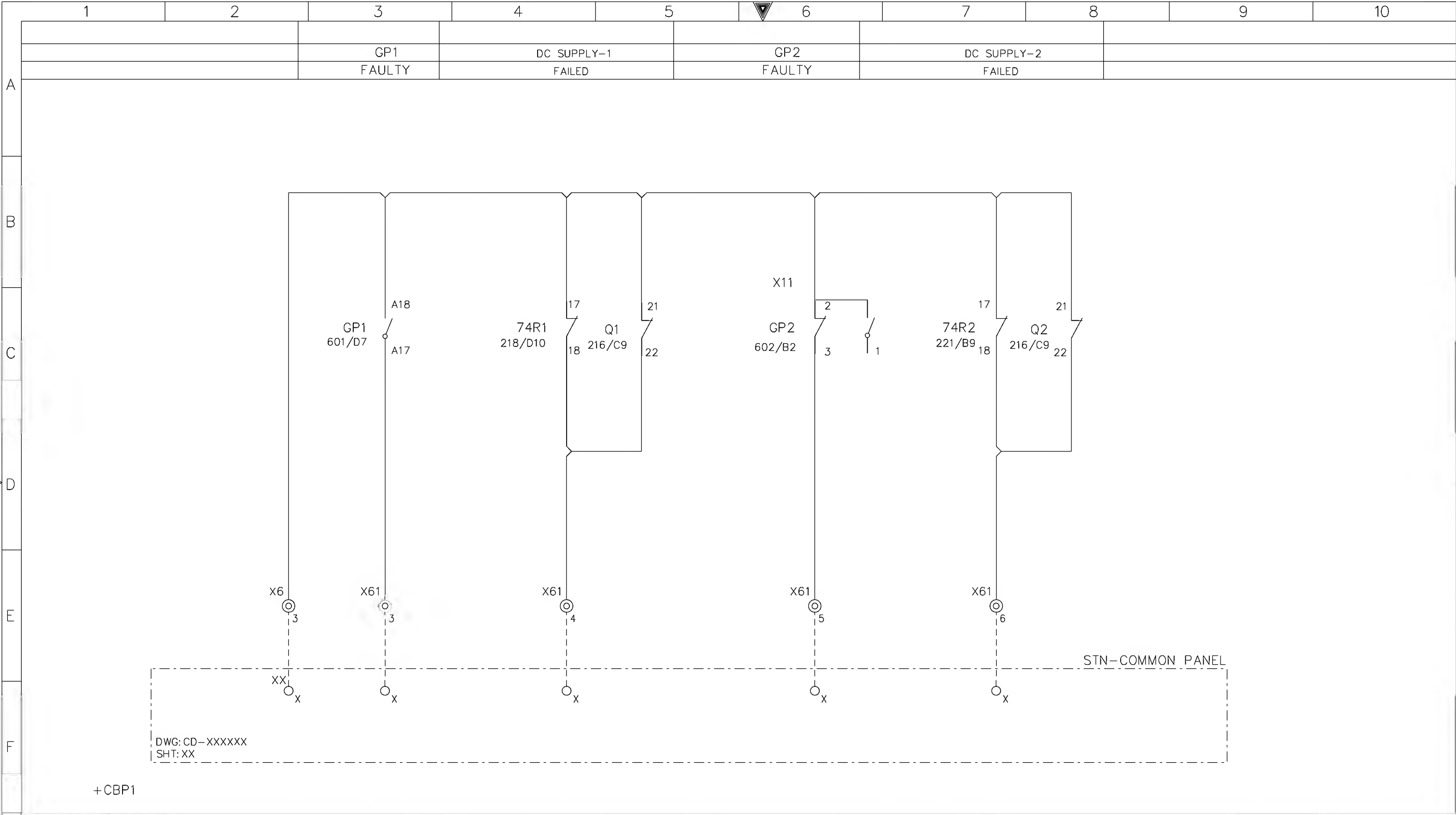
AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	14 08	FACTORY AS BUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

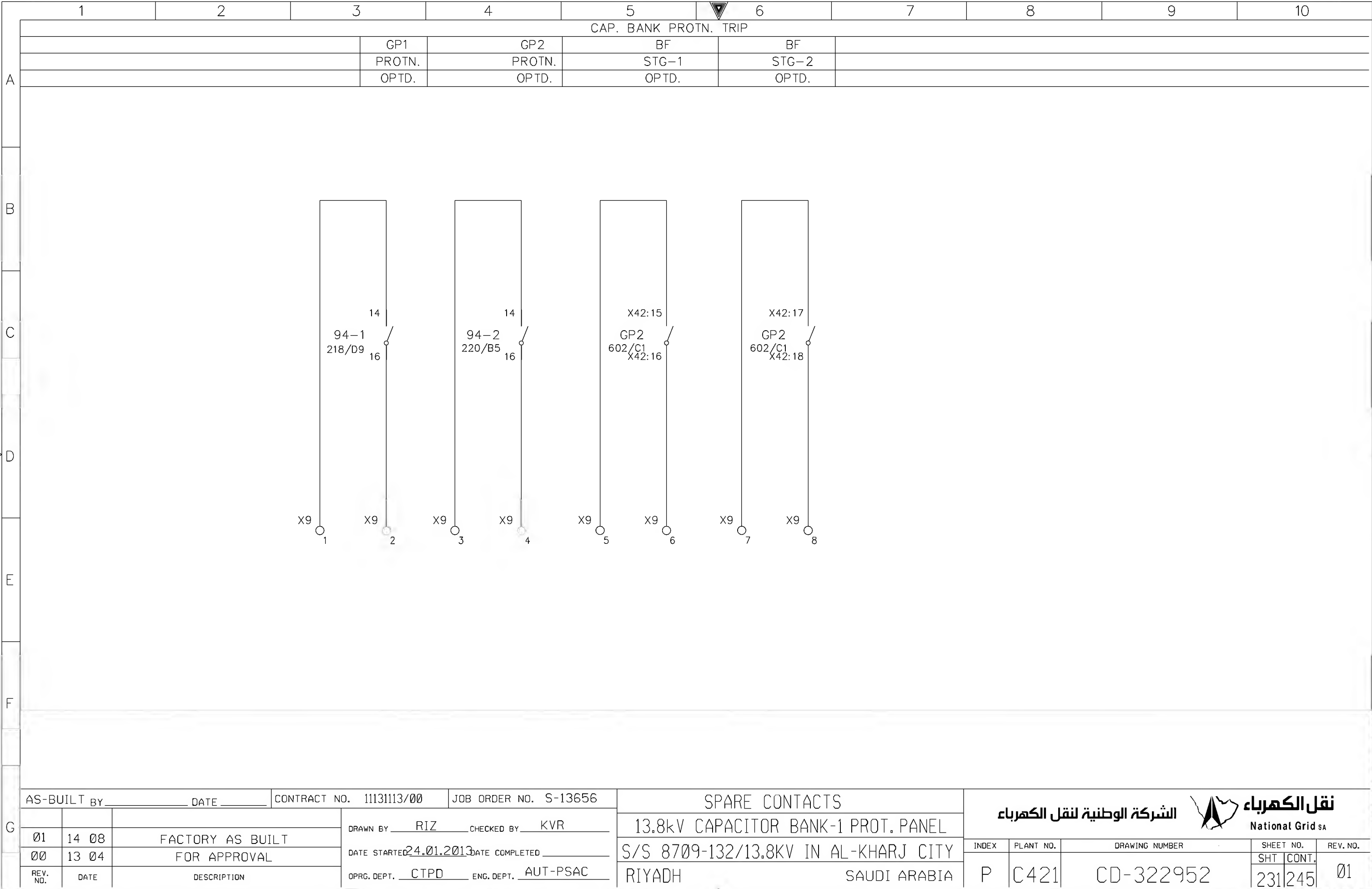
13.8kV CB S105 CLOSE BLOCK CIRCUIT  
13.8kV CAPACITOR BANK-1 PROT.PANEL  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

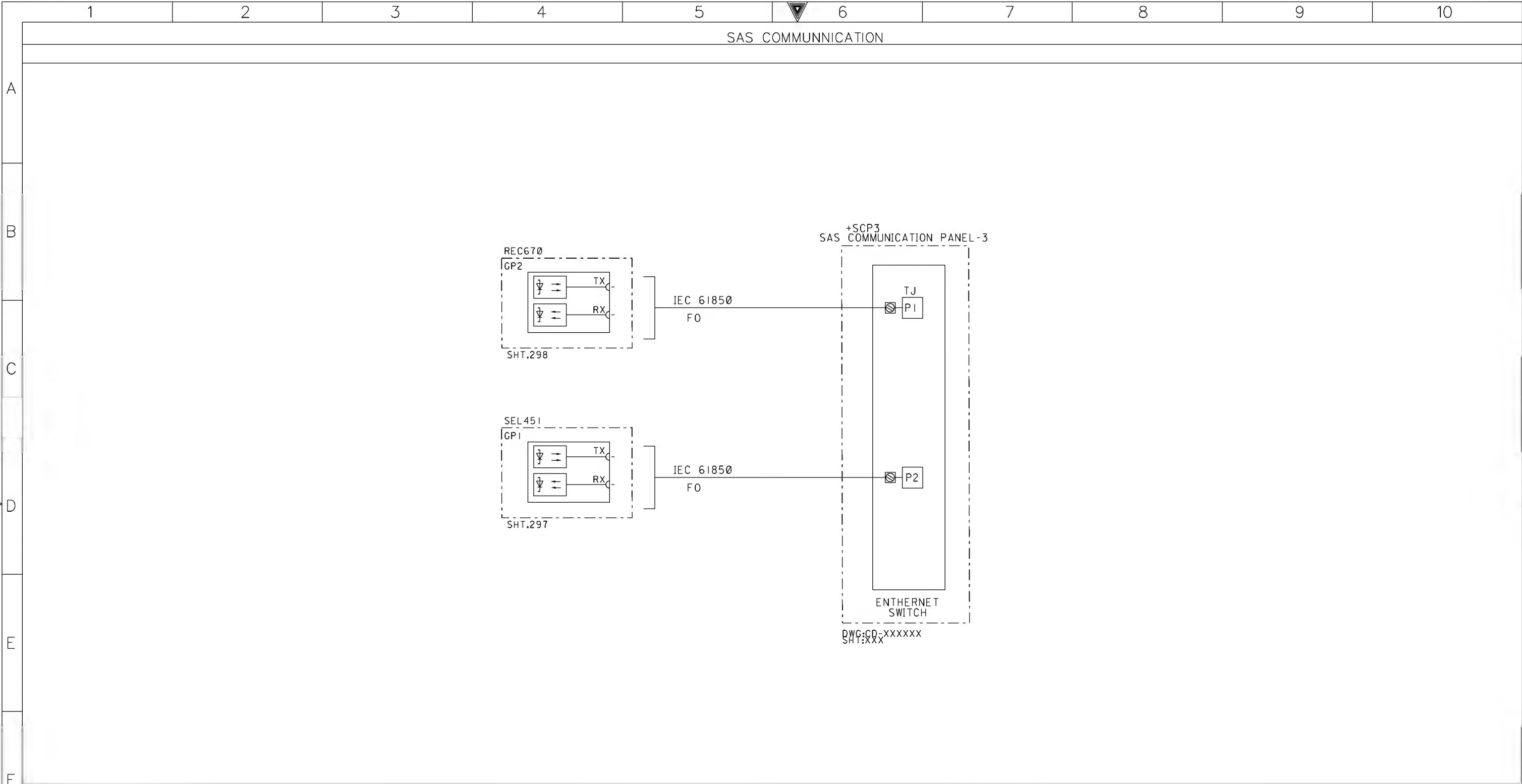
الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid SA	
PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
C421	CD-322952		SHT	CONT.	01
			223	224	





AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		STATION COMMON ALARM CIRCUITS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		13.8kV CAPACITOR BANK-1 PROT. PANEL										
G	01	14 08	FACTORY AS BUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		P	C421	CD-322952		SHT	CONT.	01
	REV. NO.	DATE	DESCRIPTION										227	231	



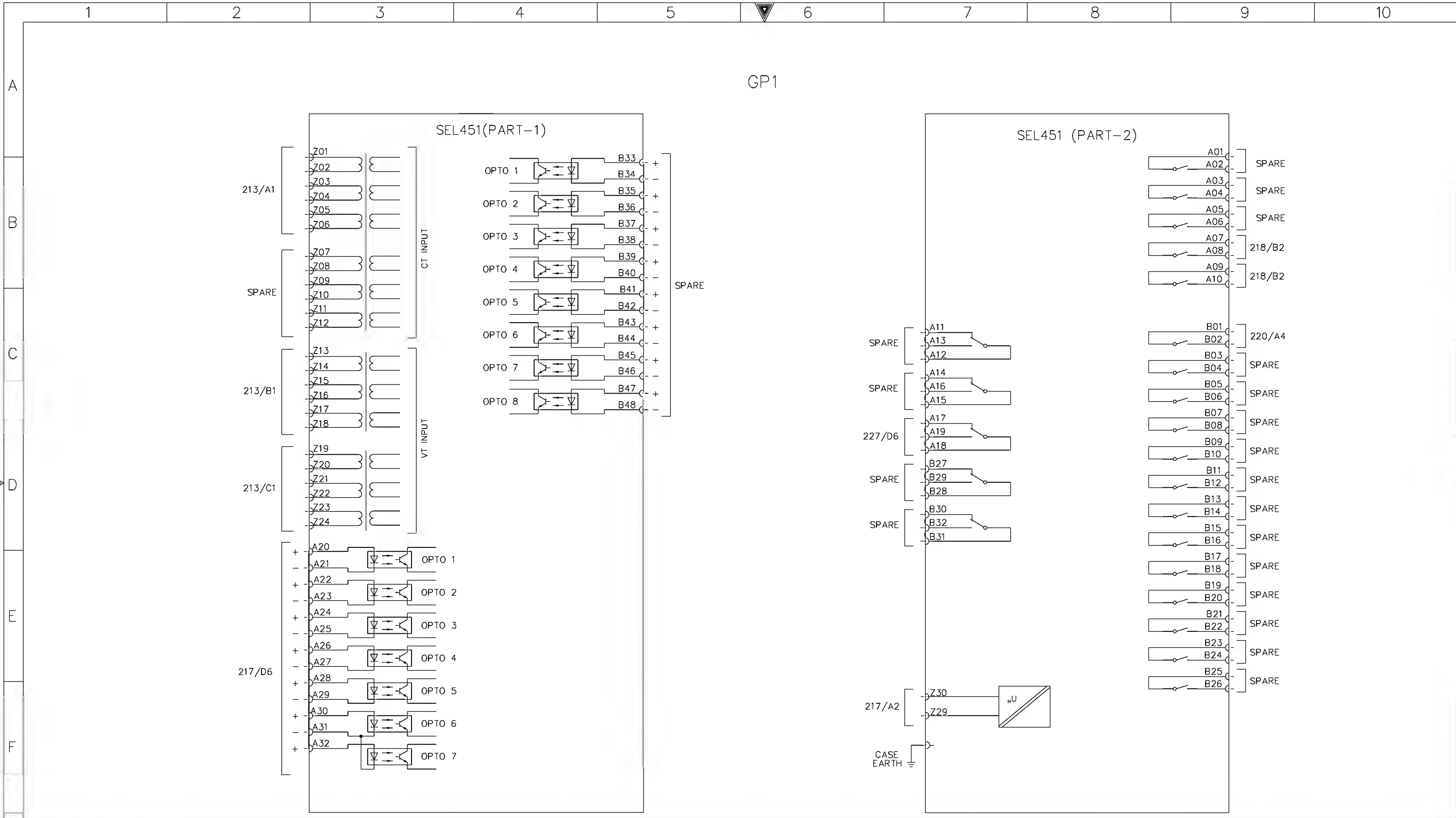


G

AS-BUILT BY _____		DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	14 08	FACTORY AS BUILT		DRAWN BY RIZ CHECKED BY KVR			
00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____			
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			

SAS COMMUNICATION			
13.8kV CAPACITOR BANK-1 PROT. PANEL			
S/S 8709-132/13.8KV IN AL-KHARJ CITY			
RIYADH SAUDI ARABIA			

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid SA	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
P	C421	CD-322952	SHT		CONT.
			245601		
				01	



AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	14 08	FACTORY AS BUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

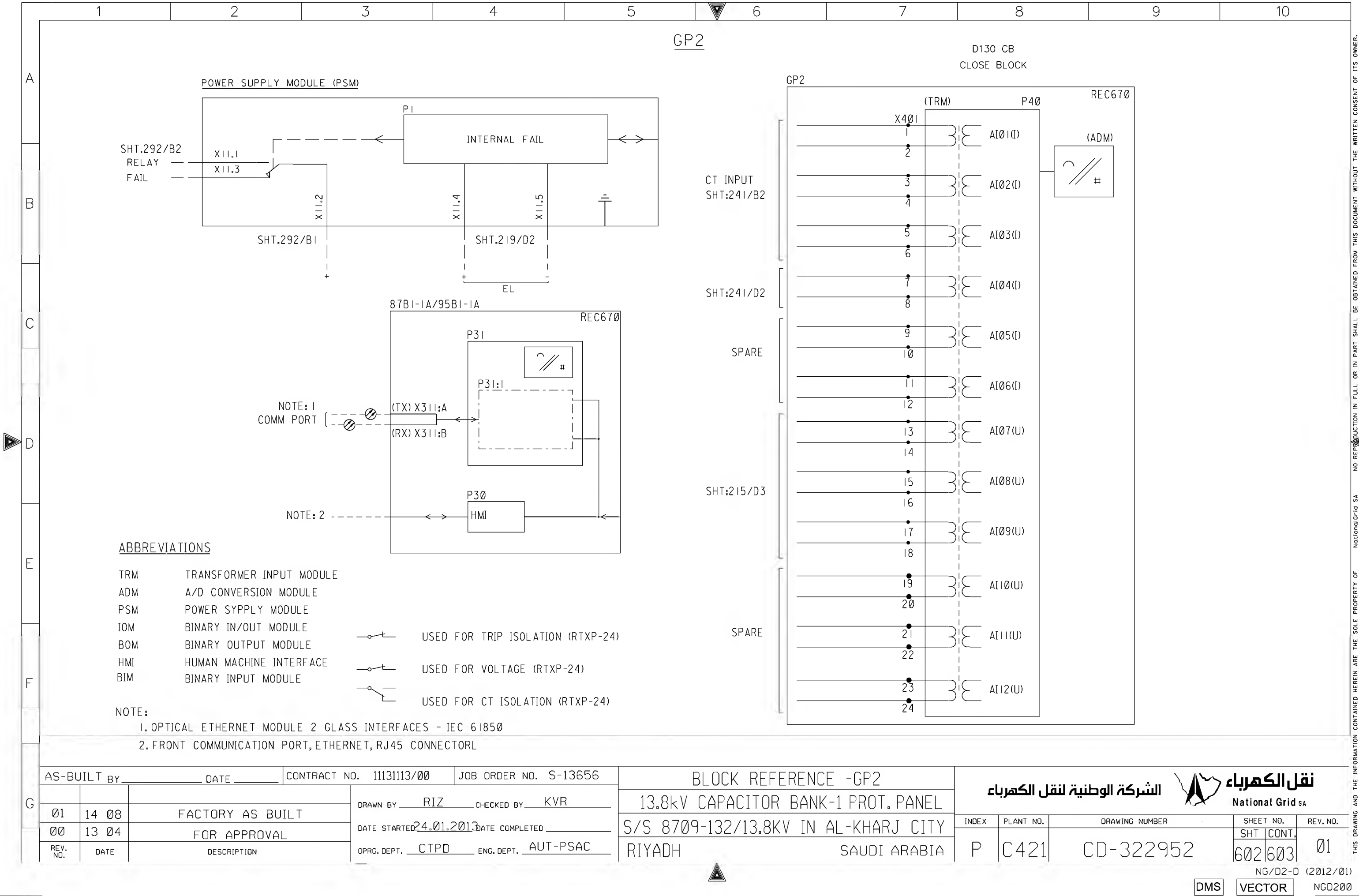
BLOCK REFERENCE-GP1

13.8kV CAPACITOR BANK-1 PROT. PANEL

S/S 8709-132/13.8KV IN AL-KHARJ CITY

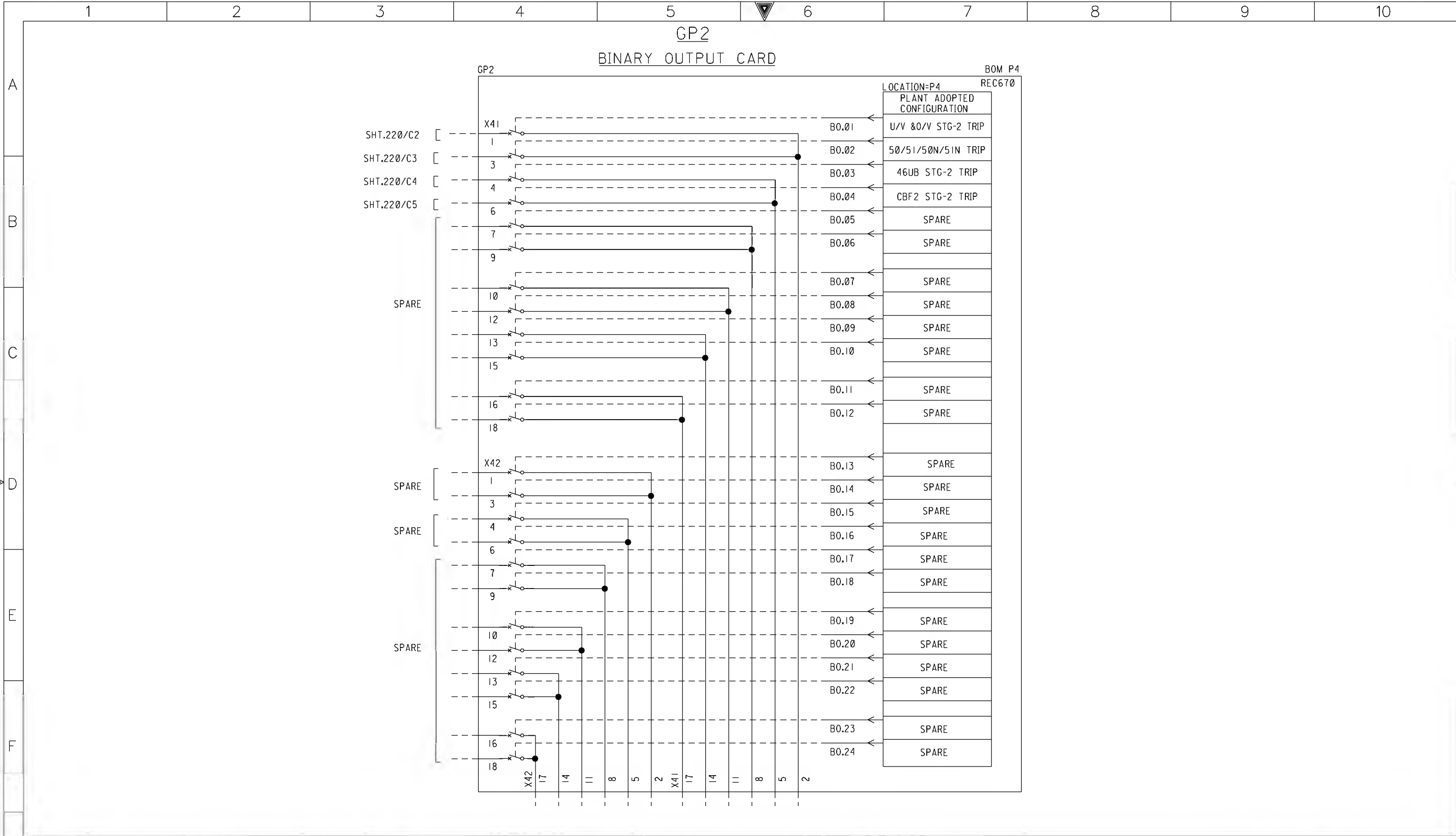
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء			
			National Grid SA			
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
P	C421	CD-322952		SHT	CONT.	01
				601	602	



	1	2	3	4	5	6	7	8	9	10
A	GP2									
B	BINARY INPUT CARD									
C	<div><div>GP2</div><div><div>BIM P3 REC670</div><div>LOCATION=P3 PLANT ADAPTED CONFIGURATION</div></div></div>									
D	<div><div><div>SHT.219/D4</div><div>{</div><div>+ ---</div><div>X31</div><div>1</div><div>BI.01</div><div>//</div><div>CB CLOSED</div></div><div><div>SHT.219/D4</div><div>{</div><div>+ ---</div><div>2</div><div>BI.02</div><div>//</div><div>CB OPEN</div></div><div><div>SHT.219/D5</div><div>{</div><div>+ ---</div><div>3</div><div>BI.03</div><div>//</div><div>BF START BY GPI</div></div><div><div>SHT.219/D5</div><div>{</div><div>+ ---</div><div>4</div><div>BI.04</div><div>//</div><div>VT MCB TRIP</div></div><div><div>SHT.219/D6</div><div>{</div><div>+ ---</div><div>5</div><div>BI.05</div><div>//</div><div>86C-2 OPTD</div></div><div><div>SHT.219/D6</div><div>{</div><div>+ ---</div><div>6</div><div>BI.06</div><div>//</div><div>86BF OPTD</div></div><div><div>SHT.219/D7</div><div>{</div><div>+ ---</div><div>7</div><div>BI.07</div><div>//</div><div>SPARE</div></div><div><div>SHT.219/D7</div><div>{</div><div>+ ---</div><div>8</div><div>BI.08</div><div>//</div><div>SPARE</div></div></div> <div><div>SPARE</div><div>{</div><div>+ ---</div><div>X32</div><div>1</div><div>BI.09</div><div>//</div><div>SPARE</div></div> <div><div>2</div><div>BI.10</div><div>//</div><div>SPARE</div></div> <div><div>3</div><div>BI.11</div><div>//</div><div>SPARE</div></div> <div><div>4</div><div>BI.12</div><div>//</div><div>SPARE</div></div> <div><div>5</div><div>BI.13</div><div>//</div><div>SPARE</div></div> <div><div>6</div><div>BI.14</div><div>//</div><div>SPARE</div></div> <div><div>7</div><div>BI.15</div><div>//</div><div>SPARE</div></div> <div><div>8</div><div>BI.16</div><div>//</div><div>SPARE</div></div>									

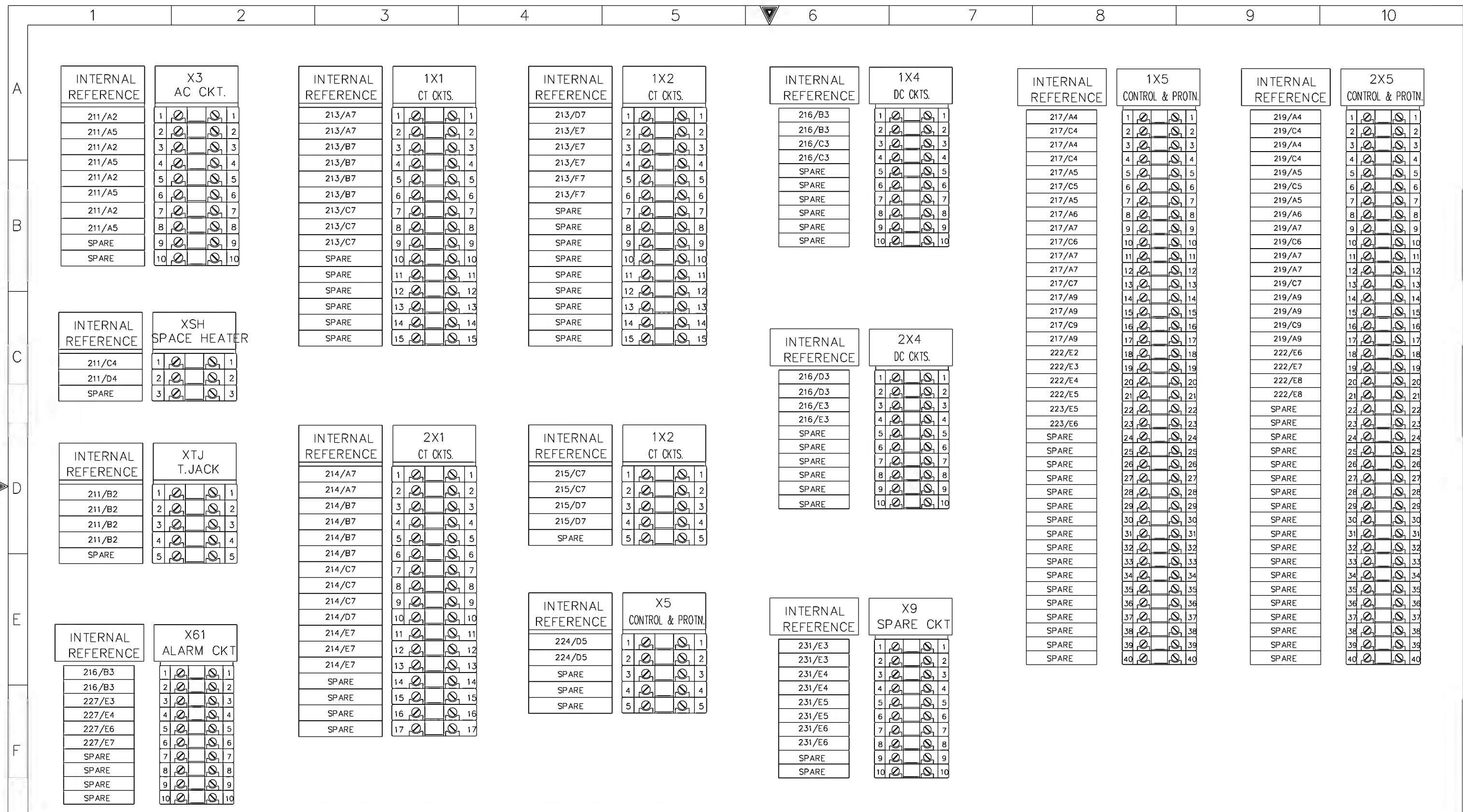




AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	14 08	FACTORY AS BUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

BLOCK REFERENCE -GP2	
13.8kV CAPACITOR BANK-1 PROT. PANEL	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
P	C421	CD-322952		SHT	CONT.
				604	605
				REV. NO.	
				01	



AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TERMINAL BLOCK ALLOCATION		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa	
01 14 08		FACTORY AS BUILT		DRAWN BY RIZ CHECKED BY KVR		13.8kV CAPACITOR BANK-1 PROT. PANEL		INDEX		PLANT NO.	
00 13 04		FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER		SHEET NO.	
REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		CD-322952		605 NIL	
						RIYADH SAUDI ARABIA		P C421		01	
								NG/D2-D (2012/01)		DMS VECTOR	

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